



California ISO

Market Results Interface- Settlements (MRI-S) Meter Data Submission User Guide

Version 1.13
01/29/2026

Document Owner: Energy Data Acquisition Systems

Owner: Energy Data Acquisition Systems	Operational Readiness
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Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)

Effective Date:

01/29/2026

REVISION HISTORY

VERSION NO. (Must match header)	DATE	REVISED BY	DESCRIPTION
1.12	02/22/2023	Priyanka N.	<ul style="list-style-type: none">Removed the reference to Internet Explorer and updated with Edge and/or Chrome
1.13	01/29/2026	Priyanka N.	<ul style="list-style-type: none">Added information on the new missing meter data screen

Owner: Johnstone, Tricia

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TABLE OF CONTENTS

Acronyms	5
Manage User Authentication and Authorization	7
Requesting for MRI-S Application Access through the UAA.....	7
Digital Certificates	8
Manage Application Configuration	8
Web Browser (Edge and/or Chrome)	8
Accessing MRI-S Application via Portal	8
Manage User Roles and Functionalities	10
Manage Meter Data tab	10
Filters.....	11
View SQMD.....	12
Export Page Contents	15
Manage User Filters	17
Manage Batch Status tab.....	18
Filters.....	18
Upload Files	19
File Types.....	24
View	27
Export Page Contents	28
Batch File Submission Specifications	28
Interfaces.....	30
Missing Meter Data Screen.....	30
Attachments	33
Attachment A: Toolbar icons and fields.....	33
Attachment B: Validation Errors	38
Attachment C: Sample CSV File Formats	43
Attachment D: Sample XML file Formats.....	46
Attachment E: dateTime Data Type	47
Attachment F: Baseline Methods and Measurement Type mapping	48

 California ISO	Operations	ISO Version:	1.13
Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)		Effective Date:	01/29/2026

Purpose

To provide external Market Participants with the instructions on how to perform various functions within the Meter Data component of the CAISO's Market Results Interface – Settlements (OMAR Replacement) User Interface (MRI-S) UI application.

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Effective Date:

01/29/2026

Acronyms

Term	Definition
AARF	Application Access Request Form
API	Application Programming Interface
Authorized ACL Group	The Authorized ACL Group section displays a list of the Access Control List (ACL) groups that isolate and grant access to a single asset (or group of assets). This group only has read only access.
CAISO	California Independent System Operator
CBL or CLB	Customer Baseline Load or Customer Load Baseline
CIM	Common Information Model
CMA	Common Multiple Application
CSV	Comma Separated Value
DREM	Demand response energy measurement
EBTMP	Excess Behind the Meter Production
ECN	Electronic Communication Network
Flowgate	Any schedule flow between two substations. In the metering space, an intertie and/or citigate is referred to as a flowgate. Imports should reflect "Gen" and Exports should reflect "Load".
GMT	Greenwich Mean Time
ISOME	ISO Metered Entity
LDAP	Lightweight Directory Access Protocol
MBMA	Meter Before Meter After
MDEF	Meter Data Exchange Format
MPP	Marker Participant Portal page
mRID	Market Resource. Resource ID as defined in the CAISO Master File.
MRI-S	Market Results Interface - Settlements
NMS	New Metering Solution

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California ISO

Operations

ISO Version:

1.13

Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)

Effective Date:

01/29/2026

PDT	Pacific Daylight Time. Currently has same time zone offset as PDT (UTC -7) but different time zone name. Pacific Daylight Time (PDT) is 7 hours behind Coordinated Universal Time. This time zone is a Daylight Saving Time zone and is used in: North America.
PST	Pacific Standard Time

RQMD	Revenue Quality Meter Data
SC	Scheduling Coordinator
SCID	Scheduling Coordinator ID
SCME	Scheduling Coordinator Metered Entity
SQMD	Settlement Quality Meter Data.
TMNT	Treatment Group Load Data
UAA	User Access Administrator. This terminology replaces the term Point of Contact (POC) to better reflect the role of the person responsible for administering the user access for their organization. The UAA will have to sign the UAA agreement through DocuSign. The agreement is sent to the signer and to the UAA Requests mailbox at UAARequests@caiso.com .
XML	Extensible Markup Language
XSD	XML Schema Definition

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<p>Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)</p>	<p>Effective Date:</p>	<p>01/29/2026</p>	

Manage User Authentication and Authorization

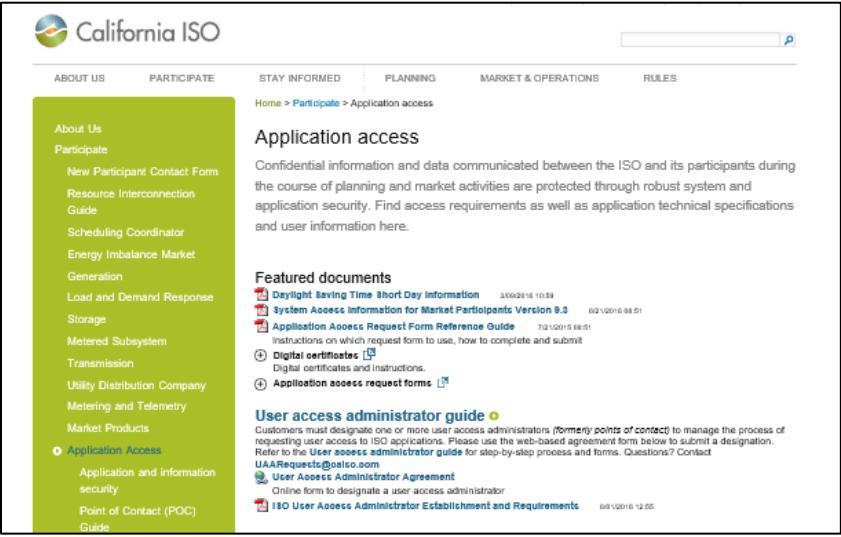
Requesting for MRI-S Application Access through the UAA

To request for application access, the request must come from a designated User Access Administrator (UAA) formerly known as the Point of Contact (POC) at your organization.

The UAA shall use Access identity Management (AIM) to manage access for the user(s), Scheduling Coordinators (SCs), and resource level granularity.

The Application Access page is available at:

<http://www.caiso.com/participate/Pages/ApplicationAccess/Default.aspx>



Note: Before the user can access the MRI-S application, access to the Market Participant Portal (MPP) page is required. If the user(s) do not have access to the MPP page, the organization's designated UAA can submit an additional request access for those user(s).

More information on how to submit a request for application access can be found at:

<http://www.caiso.com/Documents/ISO-UserAccessAdministratorEstablishment-Requirements.pdf>

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 California ISO	Operations	ISO Version:	1.13
Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)	Effective Date:	01/29/2026	

Digital Certificates

Access to the MRI-S application will require a Common Multiple Application (CMA) digital certificate for authentication.

Access to the application will be based on ISO standards for role based authorization, which allows multiple user roles and access rights (i.e. SC, third party, etc.)

Manage Application Configuration

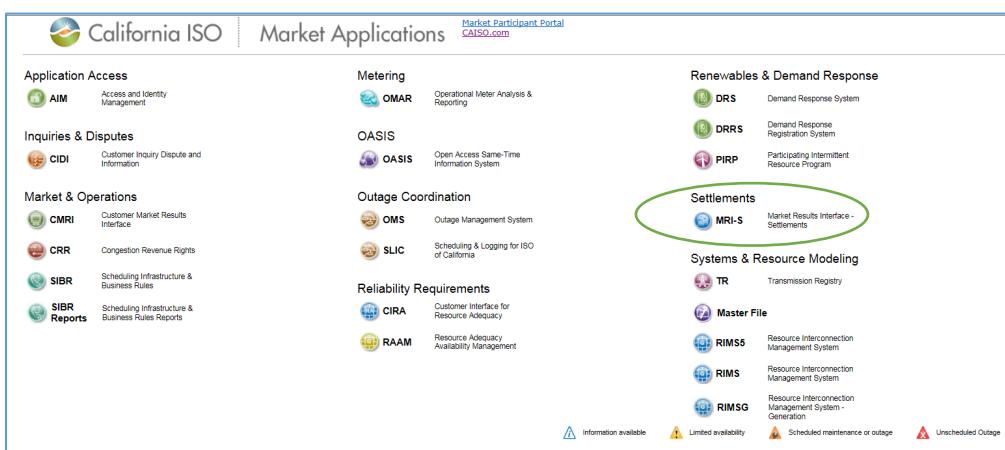
Web Browser (Edge and/or Chrome)

Market Participants have the option to use any browser type(s); however, please note that CAISO can only support Edge and/or Chrome.

Accessing MRI-S Application via Portal

Access to the *Market Participant Portal page (MPP)* is required and can be requested for through the external User's Application Access Request Form as previously mentioned.

- Once on this portal page, click on the “MRI-S” icon. This will enable the MRI-Settlements link to open up in a new window.



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Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)	Effective Date:	01/29/2026	

Note: When opening up the MRI-S application, a window will flash and disappear with no error message. This occurs when launching a new session of the UI. To avoid this, users can go to the Pop Up blocker setting to turn off the browser. More information related to this subject can be found at <http://www.caiso.com/Documents/MRI-SettlementsFAQs.pdf>.

2. Before the MRI-S application can be displayed, the user will be prompted to select the applicable CMA certificate.
3. Once in the MRI-S application, the user's view will be based on the role the user was provisioned for.

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Manage User Roles and Functionalities

User(s) can be provisioned for the following role(s):

Role Type	LDAP Roles	Descriptions
Meter Write	app_mrismrlmt_meter_write_ext	<p>Users <u>have</u> visibility to <u>both</u> the Meter Data & Batch Status sub tabs.</p> <p>Meter Data tab:</p> <ul style="list-style-type: none">• Can view, filter, and export page contents from both the Meter Data and Settlement Data grid views.• Can use Manage User Filters functionality. <p>Batch Status tab:</p> <ul style="list-style-type: none">• Can upload file, view, sort, and filter Batch ID.• Can export Batch ID and Batch Error contents from the grid views.• Can upload batch files via API or UI.<ul style="list-style-type: none">○ For API, user must use XML format.○ For the UI, user can use CSV, MDEF, and XML.
Meter Read	app_mrismrlmt_meter_read_ext	<p>Users <u>do not</u> have visibility to the Batch Status tab.</p> <p>Meter Data tab:</p> <ul style="list-style-type: none">• Can perform all the functions as “Meter-Write” users.• However, the user does not have the capability to export contents from the Meter Data or Settlement Data grid views.

Manage Meter Data tab

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 California ISO	Operations	ISO Version:	1.13
Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)	Effective Date:	01/29/2026	

Users with multiple Scheduling Coordinator IDs (SCIDs) have the flexibility to select all or specific SCID(s) for meter data management. This functionality would be performed within the session in the *Meter Data* tab. Meter trade date and interval ID within the UI is displayed PPT time zone. API meter data is displayed in GMT. SQMD exported from MRI-S are displayed in GMT format.

In the *Meter Data* tab, users can manage the following functions based on the permission level.

1. Filters
2. View SQMD [includes Versioning]
3. Export Page Contents
4. Manage User Filters

Filters

Users can use the filter functionality to narrow down the search option. Below are a list of filter options:

- Trade Dates (From and To) **[required]**
- SCID/ACL Group **[required]**
- Resource **[optional]**
- UOM **[optional]**
- Interval Length **[optional]**
- Measurement Type **[required]**
- Resource Type **[optional]**
- User Filter **[optional]**
- User Filter Resource **[optional]**
- Update Since Data Time **[optional]**

Users have the option to select multiple SCID(s).

To retrieve the meter data for review, users can use the filter options to input the desired information. Below are the steps:

1. Input the trade dates in the **From** and **To** fields. **Note:** User(s) can now retrieve a span of 31 days.
2. Select the **SCID/ACL Group** from the drop down list. **If no interval length is specified, MRI-S shall provide the data using the default interval length for each resource as specified in the master file.**
3. Select the Measurement Type from the drop down list.

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Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)

Effective Date:

01/29/2026

The screenshot shows a search interface with various filters. A red arrow points to the 'Measurement Type' dropdown, which is set to 'ALL'. A red box highlights a tooltip message: 'Not available for CBL, TMNT, and BASE'.

Date From: 08/30/2019 To: 08/30/2019 SCID/ACL Group: [ALL] Resource: [ALL] UOM: [ALL] User Filter: [ALL] User Filter Resource: [ALL] Update

Measurement Type: [ALL] **ALL** GEN LOAD MBMA

Resource Type: [ALL] User Filter: [ALL] User Filter Resource: [ALL] Update

Meter Data

CBL, TMNT, and BASE measurement type data will not be available for retrieve or view in MRI-S. This is only used for monitoring or internal auditing purposes.

4. New measurement type "EBTMP" is added effective 1/1/2021. Scheduling Coordinators are required to submit the Excess Behind the Meter Production (EBTMP) using the same resource ID as load. EBTMP represents the amount of generation that exceeds host consumption. EBTMP does not apply to EIM entities, and to certain entities that have metering arrangements negotiated and implemented before the ISO's inception, such as some smaller POU's and certain MSS entities.

Note: Only "Actual" EBTMP data can be submitted.

The screenshot shows a search interface with various filters. A red arrow points to the 'Measurement Type' dropdown, which is set to 'ALL'. A red box highlights the 'EBTMP' option in the dropdown menu.

Date From: 01/08/2021 To: 01/08/2021 SCID/ACL Group: [ALL] Resource: [ALL] UOM: MWH Interval Length: 5 Apply Reset

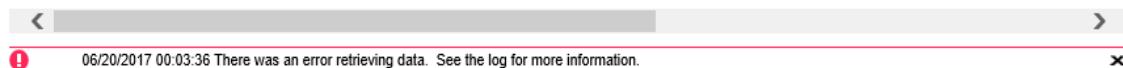
Measurement Type: [ALL] **ALL** GEN LOAD MBMA EBTMP

Resource Type: [ALL] User Filter: [ALL] User Filter Resource: [ALL] Update Since Date Time: []

Meter Data Settlement Data

5. Click **Apply** to execute the search.
6. Click **Reset** to clear the search. [optional]

Note: Search criteria that results in queries that run in excess of 5 minutes will be automatically canceled. Below is a screenshot of the error message that will be displayed at the bottom of the screen. If this error appears, please narrow your search criteria and resubmit the request.



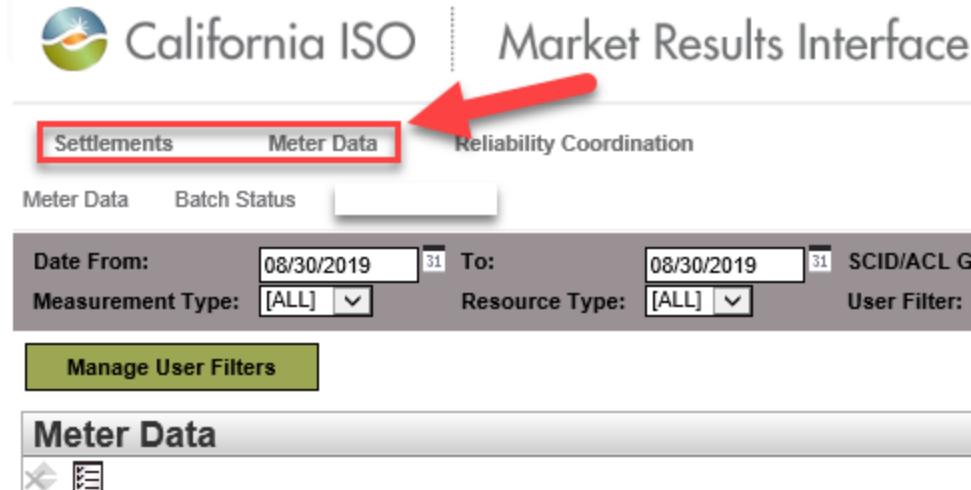
View SQMD

Users can view retrieved meter data based on the filter options. MRI-S shall ensure that the SC ID or ACL group being specified for the retrieve request is provisioned to the user. If not, the request shall be rejected with an error. Based on the user roles as mentioned in the previous section, below are Meter Data tab screenshot examples.

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Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)		Effective Date:	01/29/2026

Meter-Write:



California ISO Market Results Interface

Settlements Meter Data Reliability Coordination

Meter Data Batch Status

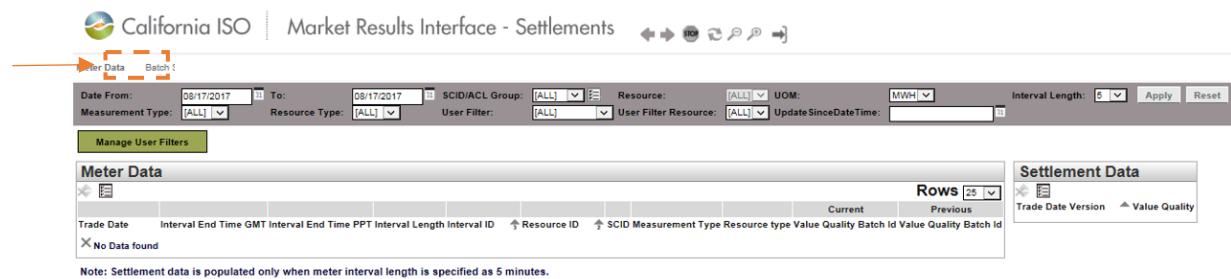
Date From: 08/30/2019 To: 08/30/2019 SCID/ACL G...

Measurement Type: [ALL] Resource Type: [ALL] User Filter:

Manage User Filters

Meter Data

Meter-Read: [Note that the Batch Status tab is not available for users with Meter Read access]



California ISO Market Results Interface - Settlements

Meter Data

Settlement Data

Date From: 08/17/2017 To: 08/17/2017 SCID/ACL Group: [ALL] Resource: [ALL] UOM: MWh Interval Length: 5 Apply Reset

Measurement Type: [ALL] Resource Type: [ALL] User Filter: [ALL] User Filter Resource: [ALL] UpdateSinceDate/Time: [ALL]

Manage User Filters

Meter Data

Rows 25

Trade Date Interval End Time GMT Interval End Time PPT Interval Length Interval ID Resource ID SCID Measurement Type Resource type Value Quality Batch Id Value Quality Batch Id

No Data found

Note: Settlement data is populated only when meter interval length is specified as 5 minutes.

Versioning

Under the **Meter Data** tab, MRI-S will maintain two versions for a given data set: CURRENT and PREVIOUS. All prior versions will not be maintained.

Versions will be displayed only in the *Meter Data* view and not the *Batch Status* view. If no version is specified, then the default is CURRENT.

Important: Users can submit as many versions until T+172B; however, the Scheduling Coordinator may be subject to Rules of Conduct if the data is late (submitted after T+48B).

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Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)

Effective Date:

01/29/2026

For any new submissions after the published settlement statement date, the following versioning transition will occur:

1. The newly submitted values would appear under the **CURRENT** Column.
2. The former values should shift to the **PREVIOUS** column.

Meter Data				Rows <input type="button" value="25"/>						
Trade Date	Interval End Time	GMT Interval End Time	PPT Resource ID	Interval ID	SCID	Measurement Type	Resource type	Value	Current	Previous

New Feature: In the *Meter Data* tab view, the **Settlement Data** grid is part of the new MRI-S Enhancement. This grid shall display the settlement values that were published according to the settlement timelines for the respective resource.

Note: Data will only be displayed if the following conditions are met:

1. SQMD has already been published according to the settlement timelines, and
2. The Interval Length filter option is listed as 5 (for 5 min-intervals). This is due to the fact that MRI-S stores the meter value in meter interval length of 5 minutes for Settlements purposes.

The Settlement grid view contains the following headers:

1. Trade Date
2. Version
3. Value
4. Quality

Meter Data											Settlement Data				
Trade Date	Interval End Time	GMT Interval End Time	PPT Resource ID	Interval ID	SCID	Measurement Type	Resource type	Value	Quality	Current	Previous	Trade Date	Version	Value	Quality
No Data found															

Note: Settlement data is populated only when meter interval length is specified as 5 minutes.

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Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)

Effective Date:

01/29/2026

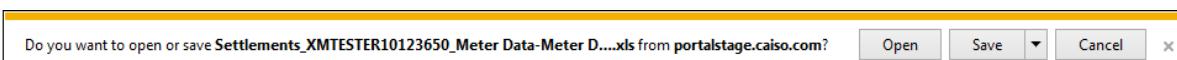
Export Page Contents

This **export** functionality allows users to export the contents from the Meter Data or Settlement Data grid. When exporting the data, please note that the system only allows the user to export one grid view at a time.

To export the retrieved meter data, below are the steps:

- Once the meter data has been populated in either grid views, left-click on the excel icon and select **Export All**.

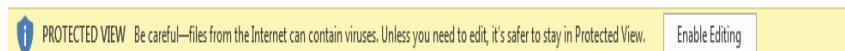
- You will be prompted to open the file. Click **Open**.



- If you receive a second prompt, click **Yes** to accept.



- If you receive a "PROTECTED VIEW" prompt, click **Enable Editing**.



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Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)

Effective Date:

01/29/2026

5. After that, the user can modify the spreadsheet as needed. Below is an example of an exported file.

Trade Date	Interval End Time GMT	Interval End Time PPT	Interval Length	Interva l ID	Resource ID	SCID	Measure ment Type	Resource type	UOM	Current		
										Value	Quality	Batch Id
01/01/2017	01/02/2017 01:00	01/01/2017 17:00	5	204	ABC_1_GEN	TEST	GEN	GEN	MWH	10.0000000	ACTUAL	46051
01/01/2017	01/02/2017 01:05	01/01/2017 17:05	5	205	ABC_1_GEN	TEST	GEN	GEN	MWH	10.0000000	ACTUAL	46051
01/01/2017	01/02/2017 01:10	01/01/2017 17:10	5	206	ABC_1_GEN	TEST	GEN	GEN	MWH	15.0000000	ACTUAL	46051
01/01/2017	01/02/2017 01:15	01/01/2017 17:15	5	207	ABC_1_GEN	TEST	GEN	GEN	MWH	10.0000001	ACTUAL	46051
01/01/2017	01/02/2017 01:20	01/01/2017 17:20	5	208	ABC_1_GEN	TEST	GEN	GEN	MWH	15.0000001	ACTUAL	46051
01/01/2017	01/02/2017 01:25	01/01/2017 17:25	5	209	ABC_1_GEN	TEST	GEN	GEN	MWH	10.0000002	ACTUAL	46051
01/01/2017	01/02/2017 01:30	01/01/2017 17:30	5	210	ABC_1_GEN	TEST	GEN	GEN	MWH	15.0000002	ACTUAL	46051

The Interval End Time GMT and Interval End Time PPT columns are part of the new features when exporting data from the *Meter Data* tab.

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Manage User Filters

This **Manage User Filters** functionality is specific to the individual user. The user can create a custom list for the purpose of filtering. This will allow the user to manage the list of SCID(s) and Resources that they have been provisioned access to.

Note: Once a filter list has been created, it cannot be deleted; however, the list can be modified as many time as needed.

To create a **User Filters** group, the following shall be performed:

1. Under the *Meter Data* view, click on the **Manager User Filters** button.
2. Click on the pencil icon to create a **New Row**. [See figure 1.1]
3. Create a *User Filter Name*. [See figure 1.2]
4. Click **Update** to save the group.
5. Next, click on the **Edit** button to customize the resource selection. [See figure 1.3]
6. The available resources will be listed on the left-hand side. Once the resources have been select, it populate on the right-hand side.
7. To do this, click on the respective arrow buttons to add or remove resources. [See figure 1.4]
8. Click **Close** when done.

Figure 1. 1

User Filter Name	Updated Date	Created By	Action
Test 1	02/02/2017 10:21	XMTESTER10123650	Edit

Figure 1. 2

User Filter Name	Updated Date	Created By	Action
Test 1	02/02/2017 10:21	XMTESTER10123650	Edit

Entity	Resource
TEST	ABC_1_GEN

Figure 1. 3

User Filter Name	Updated Date	Created By	Action
Test 1	02/02/2017 10:21	XMTESTER10123650	
Test 2	02/07/2017 13:51	XMTESTER10123650	

Entity	Resource
TEST	ABC_1_GEN

Important:
Users have the ability to create new and edit existing user filter group(s). Once the User Filter group(s) have been created, they cannot be deleted but can be modified.



Figure 1. 4



Manage Batch Status tab

User(s) with the appropriate access can manage the following through the MRI-S UI under the Batch Status View:

- 1) Filters (Batch ID, Batch Status, User ID, File Type)
- 2) Upload file(s)
- 3) View (Batch Status and Batch ID grid contents)
- 4) Export (Batch Status and Batch ID grid contents)

For a list of Batch submission validation error codes, refer to **Attachment B**.

Filters

Users can use the optional filter functionality to narrow down the search. Below are a list of filter options:

- Batch ID **[Free-form text field]**
- Batch Status (SUCCESS, ERROR, SYNC_START, VERSIONING, WARNING) **[Defaults to [ALL]]**
- User ID **[Free-form text field]**
- File Type (CSV, XML, MDEF) **[Defaults to [ALL]]**

To retrieve a list of Batch Statuses, any of the filter options can be applied to input the desired information.

Click **Apply** to execute the search.

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Upload Files

User(s) have the option to submit SQMDs via API or UI. In this user guide, the focus will be on the MRI-S UI. The UI allows Scheduling Coordinators (SCs) to submit SQMD for the SCID(s) that they have been provisioned for. Multiple SCID(s) may be issued to the user(s) as long as they are the provisioned SC. There is no limitation on the number of users per SCID.

Note: SCs are required to follow the **CAISO Settlement Payment Calendar** timelines, which can be found at <http://www.caiso.com/market/Pages/Settlements/Default.aspx>.

To upload a file via the UI in MRI-S, please perform the following:

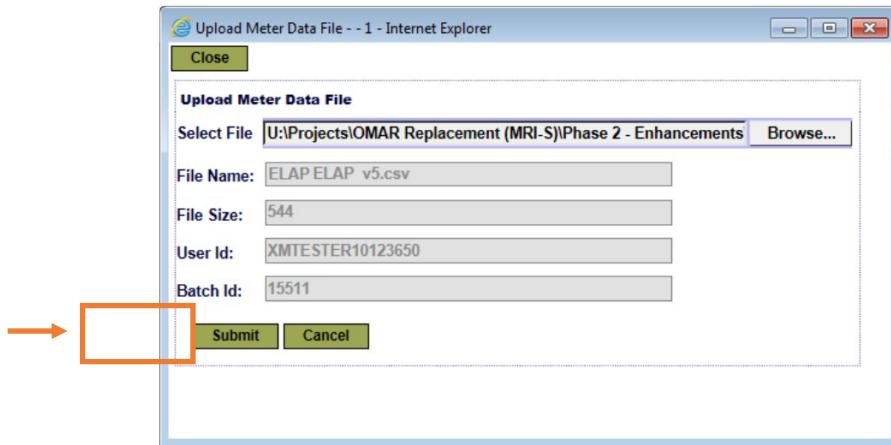
1. Go to the **Batch Status** tab.
2. Click on the **Upload File** option.

Batch ID	Status	User ID	File Type	File Name	Download File Size	Created Date	Updated Date	Current Total	Time Elapsed (sec)
1403533	SUCCESS	mv90_system	MDEF	DT169735.MDE	8.859 KB	09/01/2017 14:12	09/01/2017 14:13	78	< 2MIN
1403488	SUCCESS	mv90_system	MDEF	DT169734.MDE	21.516 KB	09/01/2017 11:17	09/01/2017 11:18	110	< 2MIN

3. Click on Browse to select the file.



4. Once the file has been selected, the data file information should be populated onto the respective fields as shown below.



5. Click **Submit** to complete the upload.

Note: If the fields are not populating, it could be related to a number of things, such as:

- Compatibility View Settings
- Firmware
- Incorrect file naming convention format
- Incorrect file extension
- Incorrect headers within the file
- Incorrect Resource ID format (i.e. missing underscores, etc.)

If the user is encountering data upload issues, please check the files based on the scenarios listed above. Should the problem persist, please submit a ticket to the ISO Help Desk.

6. Please be sure to validate that the status of the submission to ensure that the file did not fail as it can lead to Settlements implications if left unresolved.

- If the submission is rejected (ERROR), please investigate and re-submit the file.
- If the submission is successful (SUCCESS), no further action is required. However, do not forget to validate that all the intervals are accounted for under the **Meter Data** tab.



Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)

Effective Date:

01/29/2026

Below is an example of a failed submission.

Batch ID	Status	User ID	File Type	File Name	Download File Size	Created Date	Updated Date	Current Total	Marker
40564	ERROR	MODASx4431	XML	Hvzj/hzku_Test.xml	47,452 KB	09/01/2017 10:37	09/01/2017 10:40	133	5MIN

Batch ID: 40564
Error Message: Invalid Resource

If the output of the *Batch Status* is displayed as **SUCCESS**, this means that submitted file has been accepted.

If the output of the *Batch Status* is displayed as **ERROR**, this means that the file has been rejected. Please refer to the Batch ID grid within the Batch Status tab for more details.

Although the system does allow partial data submissions, it is still the responsibility of the SC to ensure that all the applicable meter data intervals have been submitted and accounted for.

Please ensure that all meter data submissions (including non-PTO load data as required from the SCs per section 26.1.4.4 of the CAISO tariff) are submitted in a timely manner according to the CAISO Settlement Payment Calendar. CAISO strongly recommends that the SC establishes a validation control to ensure that all the meter data interval(s) are accurately accounted for. If there are no controls in place to flag any potential discrepancies, the UDC's UFE may be impacted and/or the SC may be subject to Rules of Conduct.

As part of the new enhancement, MRI-S will be monitoring the submitted meter values for each market resource by comparing the submitted interval values against the registered PMax value in the CAISO Master File.

- If the meter value exceeds the registered PMax, a **WARNING** message will be generated to alert the SCs under the Batch Status tab.
- Instead of receiving a **SUCCESS** or **ERROR** message, the results will be displayed as **WARNING**.
 - If the PMAX warning is the only validation error associated to the data being submitted, MRI-S shall accept the meter value and the submission result will be displayed as **WARNING**. In these instances, please refer to the Batch ID grid (located on the right-side) associated to that specific Batch ID for more details.
 - However, if there is another error code in addition to the Pmax warning, MRI-S will reject the file and the submission result will be displayed as **ERROR**.
- In essence, meter data submitted will not be rejected if the meter value exceeds the registered PMax unless there are other errors involved.

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Operations

ISO Version:

1.13

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Effective Date:

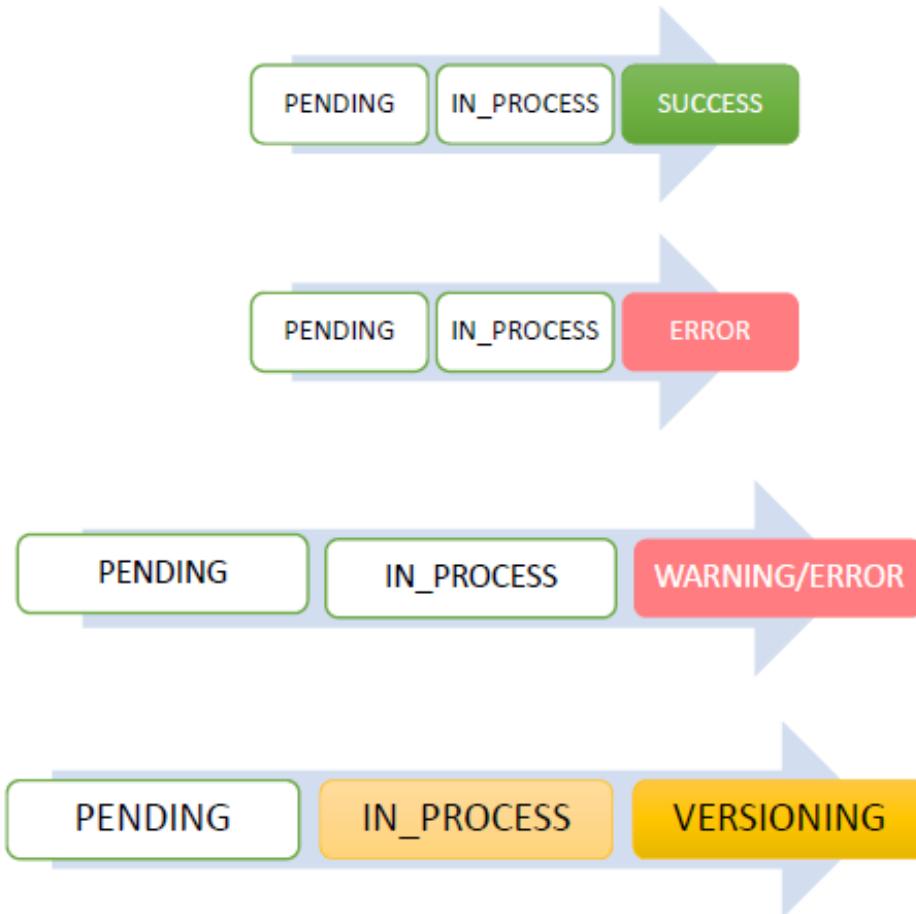
01/29/2026

For SCME resources, it is recommended that the SC monitors the WARNING statuses under the Batch Status tab in the event that it may require subsequent actions, such as updating the GRDT through Master File. Nonetheless, it is at the discretion of the SC and/or Generator Owners.

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Below is a list of potential batch status sequences:





File Types

This section will describe the three different File Type Submissions (CSV, MDEF, and XML).

1. CSV File Requirements

- These seven field names identified below are required for .csv file submission.
- The field names are not case sensitive.
- The file will not use text qualifiers such as single quote or double quote characters.
- The file will use ANSI characters with CRLF to separate records.
- All inbound files shall be submitted in GMT format.
- All file records will be consistent with respect to a single time format.
- Inbound file extension must be “.CSV”.
- Filename length must not exceed 255 characters, including the extension.
- Filename is case insensitive.

To view samples of CSV file(s), refer to **Attachment C**.

Order	Header Fields	Description	Example of Valid Values
1	RES_ID	Resource ID as defined in the CAISO Master File. (Max length 32 alphanumeric characters)	ABC_1_TEST
2	MSMT_TYPE	This is the measurement type. Measurement types are the same as the channel ID in the current metering solution. LOAD is channel 1 and GEN is channel 4. (Max length is 4 text characters)	“GEN” or “LOAD” or “MBMA” or “CBL” or “TMNT” or “EBTMP” <i>(Note: Use XML file for “CBL”, “TMNT”, or “BASE”).</i>
3	INTERVAL_END_TIME	Must be in GMT Format End Date time in GMT of the interval for which the meter value is being submitted or retrieved. This is interval ending. (Max length is 29 characters)	2016-02-01T00:00:00.000+00:00



4	VALUE	Meter value or Meter Quantity. Decimal values should be (16, 8), meaning up to 8 digits before and after the decimal point.	1.1234567
5	UOM	Unit of Measure. "k" for kWh or "M" for MWh. (Max length is one text character) Note: Values are case sensitive.	"k" or "M"
6	INTERVAL_LENGTH	This is the interval length of the trading time in minutes. (Max length is 2 integers) Note: The interval length should be the same for the trade date. For example, if the prior submission for the date happened in 5 minute intervals, all further revisions to the same date should be submitted with the same interval length. This information would have been provided to CAISO Master File via GRDT.	"5", "15", or "60"
7	MSMT_QUALITY	Quality of the measurement. "A" = Actual and "E" = Estimated (Max length is one text character)	"A" or "E"

 California ISO	Operations	ISO Version:	1.13
Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)	Effective Date:	01/29/2026	

2. MDEF Requirements

MDEF must be formatted on GMT. For more information on MDEF GMT configuration, please contact ITRON support.

For MDEF File Specification, refer to section 10 of the Post-Market Consol - OMAR Replacement ISO Interface Specification document at

<http://www.caiso.com/Pages/documentsbygroup.aspx?GroupID=53D6EA67-9F4A-434D-8C41-BAA46169A237>

3. XML Requirements

Requirements and samples of various XML file(s) can be found on the Interface Specification documentation located at:

http://www.caiso.com/Documents/EnergyStorageandDistributionEnergyResourcePhase2-MRI-STechnicalSpecificationsv21_Redlined.pdf

Note: Registration ID should be included if using CBL or TMNT as the measurement types.

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Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)	Effective Date:	01/29/2026	

View

This functionality allows users to view the contents listed under the Batch Status and Batch ID grids.

Under the **Batch Status** grid, users can modify the column headers. Below is a list of column options:

- Batch ID
- Status
- User ID
- File Type
- File Name
- File Size
- Created Date
- Updated Date

Under the **Batch ID** grid, users can modify the column headers. Below is a list of column options:

- ID
- Batch ID
- Error Code
- Resource ID
- Resource Name
- Type
- Measurement Type
- Interval End Date
- Error Message
- Error Code Description
- System Error Description
- Created Date

Note: On the UI, MRI-S shall allow other users belonging to the same organization to view the submission status of the files submitted by another user.

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Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)

Effective Date:

01/29/2026

Export Page Contents

Similar to the steps outlined under the Meter Data tab, the export function under the Batch Status view allows users to export the contents under the Batch Status and Batch ID grids using the excel icon.

Batch File Submission Specifications

Specifications	Performance	Adjustments
Maximum acceptable size of the attachment	15 MB (Uncompressed)	SCs can adjust either the trade date range or the number of resources being submitted to adhere to this requirement. The following error message will be generated, "Use policy violated with an attachment of size XX* MB. Maximum allowed attachment size is 15 MB."
Average response time for standard output for a submit	<5 Seconds	
Average wait time for batch validation to be completed	5 Minutes	

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Effective Date:

01/29/2026

Average time to retrieve meter data up to 200,000 records	<60 Seconds	For meter data retrieve, system will use the number of database records in the resulting data set to control the volume and performance. The system will do a count for the number of records requested and will limit this to 200,000. SCs can use the keyword ALL for the four distinct resource types and can also control the trade date interval being requested so that the resulting data set is within the limit of 200,000 records. Any retrieve request that results in more than 200,000 database records being retrieved will result in the following error being generated: Use policy violated with YY** records retrieved. Maximum allowed is 200,000 records.
---	-------------	---

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Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)	Effective Date:	01/29/2026	

Interfaces

This section briefly describes the submission requirements for the API and UI.

1. Application Programming Interface (API):

The SQMD:

- i. Must be formatted as XML
- ii. Must be in GMT
- iii. Must contain the required header attributes

2. User Interface (UI):

The SQMD:

- i. Must be formatted as MDEF (.mde), Comma Separated Value (.csv), and XML
- ii. Must be in GMT
- iii. Must contain the required header attributes
- iv. Can have the meter submitted in either MWh or kWh

Missing Meter Data Screen

CAISO intends to provide a solution to Market Participants that would allow them the functionality to view missing Meter and Monitoring Data, prior to the tariff defined submission deadline. This would allow the Market Participant to self-correct and timely submit Meter and Monitoring Data to the CAISO via MRI-S and avoid penalty.

A new Missing meter data screen is added to MRI-S which will allow users to view the list of resources that are missing meter data for the selected Trade Date.

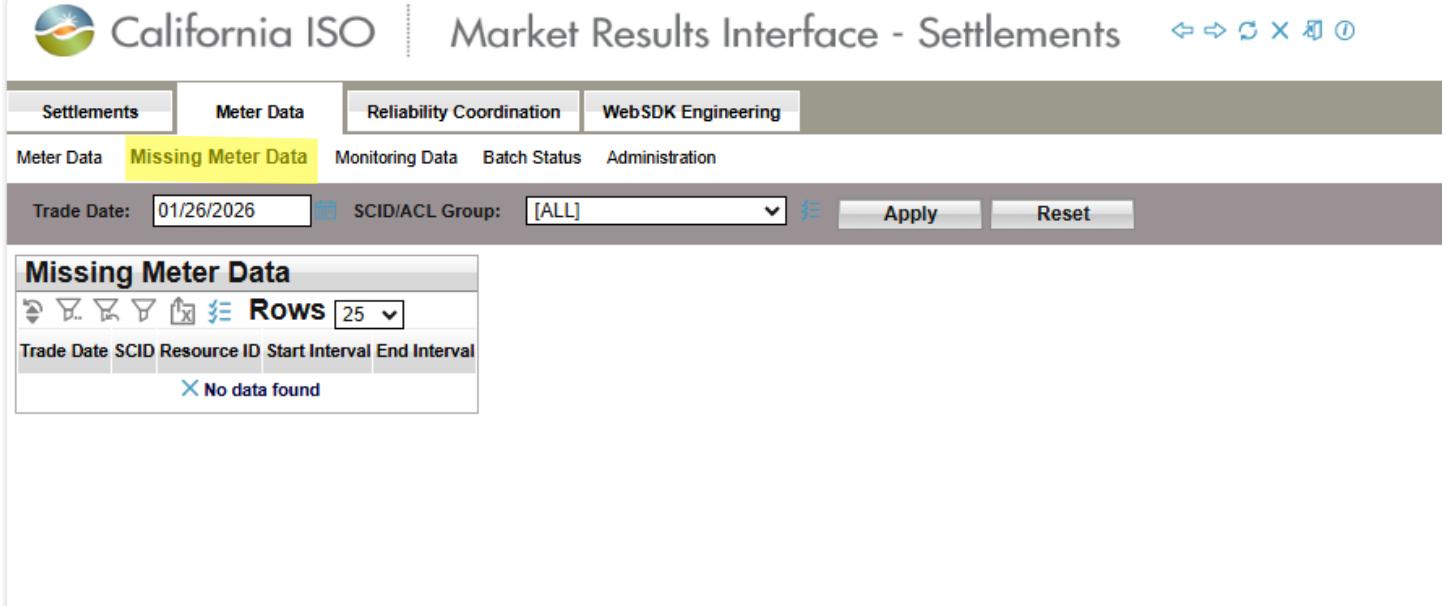
MRI-S will display the following data to external participants (SCs) and make it accessible and query-able by each resource's SC:

Missing Metering Data by:

- Trade Date
- SC ID
- Resource ID

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 California ISO	Operations	ISO Version:	1.13
Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)	Effective Date:	01/29/2026	



Missing meter data tab is located under the Meter data tab in MRI-S. User can enter a trade date and select the SCID associated to them. Once Apply button is clicked, MRI-S will display a list of resources that are missing meter data for that Trade Date.

Courtesy notices sent by EDAS team on T+44B will be replaced by this MRI-S Screen which shows the missing meter data.

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 California ISO	Operations	ISO Version:	1.13
Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)		Effective Date:	01/29/2026

Links

Digital Certificates

<http://www.caiso.com/Pages/documentsbygroup.aspx?GroupID=475C9E28-B79D-40DC-A4D7-F0B25B396D99>

POC AARF Reference Guide

<http://www.caiso.com/Documents/ApplicationAccessRequestFormReferenceGuide.pdf>

ISO User Access Administrator (UAA) Establishment and Requirements

<http://www.caiso.com/Documents/ISO-UserAccessAdministratorEstablishment-Requirements.pdf>

User Access Administrator Agreement

<https://na2.docusign.net/Member/PowerFormSigning.aspx?PowerFormId=4d8a3766-06d8-4074-9371-4df17f745f34>

Review of Access and identity Management (AIM) Access Control List (ACL) Functionality

http://www.caiso.com/Documents/Access_IdentityManagementAccessControlListTraining.pdf

Access and Identity Management (AIM) User Guide

http://www.caiso.com/Documents/AccessandIdentityManagement_AIM_UserGuide.pdf

Access and Identity Management (AIM) Training

http://www.caiso.com/Documents/Access_Identity_Management_Training.pdf

Meter Data Exchange Format

<https://www.caiso.com/Documents/MeterDataExchangeFormat.pdf>

MRI – Settlements External User Guide

<https://developer.caiso.com/>

Settlement Payment Calendar

<http://www.caiso.com/market/Pages/Settlements/Default.aspx>

Demand Response BPM

<https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Demand%20Response>

Metering BPM

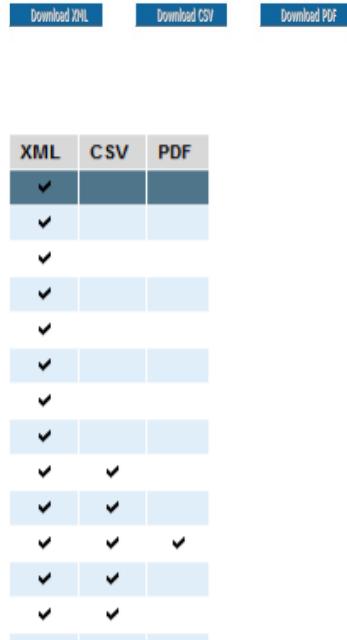
<https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Metering>

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Attachments

Attachment A: Toolbar icons and fields

Toolbar Options	Description	Icons
Download Buttons	<p>These buttons enables the user to download the Settlement files in any of the three formats: XML, CSV or PDF. The three buttons are disabled till the user selects the files to be downloaded. MRI provides the user with three columns specifying the format in which the files are available. These formats are made available based on the requests submitted by the SCs. Depending on the format that is available, the CSV, PDF and/or XML columns are checked. When the user selects files in multiple formats, all buttons for those formats become active. For example, if a user selects a file in XML and another in CSV format, both the "Download XML" and "Download CSV" buttons become active as seen below.</p>	
Other Controls	<p>Inline Filter button allows the user to have a way to filter the results even further based on the results of the main filtering.</p>	



Paging Controls	Enables the user to page through the output sequentially, go to the first or last page, or go to a specific page.	
Previous and Next icon	Allows the user to move to the previous or next display.	
Stop Loading icon	Allows the user to stop loading the display.	
Refresh icon	Allows the user to refresh the current display.	
Zoom Out icon	Allows the user to zoom out of the display.	
Zoom In icon	Allows the user to zoom in on the display.	
Close icon	Allows the user to close the application.	
Batch Status Adjustment Column	[Optional filter] Allows the user to customize their column headers under the Batch Status view.	
Batch Errors Adjustment Column	[Optional filter] Allows the user to customize their column headers under the Batch Errors view.	

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[Excel] Export icon	Allows the user to export the displayed data. Users have three different options to choose from: Export All, Export Page, or Export Wizard.	
Rows icon	[Optional filter] Allows the user to designate the number of rows they want to see on the display. [25, 50, 100, 200, 500]	Rows <input type="button" value="25"/>
Batch ID field	[Optional filter] Allows the user to retrieve the Batch ID by manually typing in the Batch ID #.	Batch ID <input type="text"/>
Batch Status field	[Optional filter] Allows the user to specify the Batch Status by selecting from the following options: [ALL], SUCCESS, or ERROR.	Batch Status <input type="button" value="SUCCESS"/>
User ID field	[Optional filter] Allows the user to narrow down the search parameter by typing in the User ID.	User ID <input type="text"/>
File Type field	[Optional filter] Allows the user to narrow down the submitted file type by selecting from the following options: CSV, MDEF, or XML.	File Type <input type="button" value="ALL"/>
Apply button	Allows the user to initiate the filter selection.	Apply
Reset button	Allows the user to reset the filter selection.	Reset
Date range field	[Required filter] Allows the user to specify the date range from and to. Note: Dates must not span more than 31 days.	Date From: <input type="text" value="02/02/2017"/> To: <input type="text" value="02/02/2017"/>



SCID/ACL Group field	[Required filter] Based on user's role on the CMA digital certificate, this field allows the user to select from a list of SCID(s) or ACL Group(s) that was provisioned to the user.	SCID/ACL Group: <input style="border: 1px solid black; padding: 2px 5px; border-radius: 5px; width: 100px; height: 20px;" type="button" value="ALL"/>
Resource field	[Optional filter] Based on which SCID or ACL group the user has been provisioned for, this field allows the user select from a list of Market Resources.	Resource: <input style="border: 1px solid black; padding: 2px 5px; border-radius: 5px; width: 100px; height: 20px;" type="button" value="ALL"/>
UOM field	[Optional filter] Allows the user to narrow down the UOM type for the meter value to be retrieved by selecting from the following options: [ALL], KWH or MWH.	UOM: <input style="border: 1px solid black; padding: 2px 5px; border-radius: 5px; width: 100px; height: 20px;" type="button" value="KWH"/>
Interval Length field	[Optional filter] Allows the user to narrow down the Interval Length size (data granularity) by selecting from the following options: [ALL], 5, 10, 15, or 60. Note: If the user does not specify a value, the default is what is specified in the master file for that particular resource. The interval length should be the same for a trade date. For example, if the prior submission for the date happened in 5 minute intervals, all further revisions to the same date needs to be submitted with the same interval length.	Interval Length: <input style="border: 1px solid black; padding: 2px 5px; border-radius: 5px; width: 100px; height: 20px;" type="button" value="ALL"/>
Measurement Type field	[Optional filter] Allows the user to narrow down the Measurement type by selecting from the following options: [ALL], LOAD, or GEN	Measurement Type: <input style="border: 1px solid black; padding: 2px 5px; border-radius: 5px; width: 100px; height: 20px;" type="button" value="ALL"/>



Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)

Effective Date:

01/29/2026

Resource Type field	[Optional filter] Allows the user to narrow down the Resource type by selecting from the following options: [ALL], GEN, LI, LOAD, TG, or TIE	Resource Type: <input type="button" value=" [ALL] ▾"/>
User Filter field	[Optional filter] Allows the user to select from a list of pre-existing filter groups created by the user.	User Filter: <input type="button" value=" [ALL] ▾"/>
User Filter Resource field	[Optional filter] Allows the user to narrow down the Resource that was established within the User Filter option.	User Filter Resource: <input type="button" value=" [ALL] ▾"/>
UpdateSinceDateTime field	[Optional filter] Allows the user to use an optional timestamp element to request using the UI or API for incremental changes to data since their last retrieve. The user shall be able to specify the trade date(s) and the new optional timestamp element to retrieve only the changes to the data for the trade date(s) that were updated since the new optional timestamp element.	UpdateSinceDateTime: <input type="text"/> <input type="button" value=" []"/>

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01/29/2026

Attachment B: Validation Errors

Note: Anytime you receive error code 1001 or any unlisted error, Market Participant(s) are to submit a CIDI ticket for these instances.

Error Code	Error Message	Error Description
1001	Unexpected Error	Unhandled Exception
1002	Invalid Xml	XSD validation errors
1003	Mandatory Field Is Missing	One or many of the mandatory fields are missing in the attachment
1004	Invalid Resource	The resource ID being specified is not provisioned to the user for the given trade date
1005	Sc Submission Of Data For This Resource Is Not Allowed	The resource ID being submitted is not provisioned for SC submission
1006	Late Meter Data	Trade date submitted is beyond the later meter cutoff date
1007	Invalid Measurement Type	Valid values are LOAD or GEN or MBMA or CBL or TMNT or BASE or EBTMP
1008	Invalid Time Interval Length	Valid values are 5, 15 or 60
1009	Invalid Time Format	Interval End Time should be in GMT
1010	Interval End Time Does Not Match With Time Interval Length	The granularity specified in the Interval Time Length field should match the granularity of the interval end time
1011	Invalid Meter Value Precision	Valid precision for meter value is (16,8), ie. 8 digits before and after the decimal point

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Effective Date:

01/29/2026

1012	Invalid Measurement Quality	Valid values are ACTUAL or ESTIMATED (ESTIMATED invalid for EBTMP)
1013	Version Cannot Be Specified For Meter Data Submission	Version field will only be populated for data retrieve request and response, but cannot be specified in the submission
1014	Invalid Version Requested	Valid values for retrieve request are CURRENT, PREVIOUS or HISTORY
1015	Invalid Resource Type	The resource id is associated to a wrong XML element for resource type
1016	Duplicate Data Found	For a given resource id, and measurement quality, more than one value found for a given interval end time
1017	Estimated Data Cannot Be Provided For This Trade Date	Estimated data can only be submitted for the first Recalculation statement
1018	Demandresponseregistration Should Not Be Provided	Meter data for DR Resources are not allowed at this time
1019	Unexpected Security Error	Unhandled exception specific to auth service
1020	No Access to resources for batch	No Read Access allowed for the resources under this batch id
1021	Invalid Trade Date	Meter data can only be submitted for upto 7 days in the future
1022	Invalid Unit of Measurement	Unit of Measurement is not in values [k,M]
1023	Invalid MDEF File	Submitted MDEF File is Not Valid or Corrupted

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1024	Actual data cannot be provided for this trade date	Actual data can only be submitted once the trade date has occurred
1025	Invalid CSV File	Given CSV File is Not Valid. Please Check Header Record and All the Values are Mandatory RES_ID,MSMT_TYPE,INTERVAL_END_TIME,VALUE,UOM,INTERVAL_LENGTH,MSMT_QUALITY
1026	Time Interval length does not match meter data interval specified for this resource	Meter data interval as specified per resource in the master file does not match the time interval length being submitted
1027	Invalid measurement type for resource ID	The measurement type specified for the resource ID is not valid
1028	Meter value exceeds PMAX. See Description for Values.	Meter value submitted for a resource is more than the registered PMAX in the master file. Note: This is a warning, and data will still be accepted
1029	Invalid SC ID or ACL Group	The SC ID or ACL Group being specified is not provisioned to the user
1030	Invalid meter value	Meter value cannot be negative
1031	PDR Resource should be a certified SPIN/Non SPIN resource when measurement type is LOAD or MBMA	Only PDR resources that are awarded spin or nonspin can submit LOAD or MBMA



Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)

Effective Date:

01/29/2026

1032	PDR Resource should be a certified SPIN/Non SPIN resource when measurement type is LOAD or MBMA	Only PDR resources that are awarded spin or nonspin can submit LOAD or MBMA
1033	Invalid Time Interval Length for the submitted measurement type, Hourly intervals are expected.	Valid values are 60 for CBL and TMNT
1034	Demandresponseregistration must be provided for CBL and TMNT measurement type	Registration Id is required for CBL and TMNT
2001	Unexpected Error	Unhandled Exception
2002	Submitted XML file is not valid	XSD validation errors.Invalid enumeration values for Unit and Multiplier will also result in this error.
2003	One or more mandatory fields are missing in the attachment	One or more mandatory fields are missing in the attachment
2004	Invalid Net Energy Zone	The specified Net Energy Zone ID is not valid for the given date range.
2005	The Net Energy Zone being submitted is not provisioned for the RC ENTITY	The Net Energy Zone is not provisioned to the submitting entity.
2006	Late Net Energy submission	Submission date is past cutoff date.

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Effective Date:

01/29/2026

2007	Invalid time format	Interval Start and End Time needs to be in GMT format.
2008	Invalid Net Energy value precision. Valid precision is (16,8)	Valid precision for Net Energy value is (16,8), ie. 8 digits before and after the decimal point
2009	Duplicate Net Energy value found. Must be either netGeneration or netLoad	The data cannot be provided for both GEN and LOAD XML elements at the same time.
2010	Unexpected Security Error	Unhandled exception specific to auth service
2011	Invalid Unit of Measurement	Unit of Measurement must be "M". This validation is captured by error code 2002
2012	Invalid Net Energy value	Net Energy value cannot be negative
2013	Use policy violated with an attachment of size XX* MB. Maximum allowed attachment size is 5 MB	Use policy violated with an attachment of size XX* MB. Maximum allowed attachment size is 5 MB
2014	MessageHeader version is missing or invalid	MessageHeader version number is required for backwards compatibility: "v20181001"
2015	For a given Net Energy Zone and Trade period more than one value found	Payload contains duplicate entries for Net Energy Zone and Trade period.
2016	Invalid Trade Period	Next year data is expected for current submission.

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Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)

Effective Date:

01/29/2026

2017	Start Date must match with Activation Start Date	The Net Energy Zone Start Date is not matching with the Entity activation start date for partial submission on same year.
2018	Invalid Net Energy submission date. Valid months are %s.	Net Energy submission date is outside of allowed months.

Attachment C: Sample CSV File Formats

Note: The resource configuration attributes must coincide with the information that were submitted to CAISO Master File; otherwise, the validation will fail causing the file to be rejected.

Below are three sample CSV screenshots where the file formatting are set-up correctly.

Sample 1:

This submission is for a generation resource for trade date 02/01/16, formatted in GMT with kWh values for 5 minute intervals that are for actual values.

RES_ID	MSMT_TYPE	INTERVAL_END_TIME	VALUE	UOM	INTERVAL_LENGTH	MSMT_QUALITY
ABC_6_TEST	GEN	2016-02-01T00:00:00.000+00:00	5000	k	5	A
ABC_6_TEST	GEN	2016-02-01T00:05:00.000+00:00	5002	k	5	A
ABC_6_TEST	GEN	2016-02-01T00:10:00.000+00:00	5002	k	5	A
ABC_6_TEST	GEN	2016-02-01T00:15:00.000+00:00	5003	k	5	A
ABC_6_TEST	GEN	2016-02-01T00:20:00.000+00:00	5004	k	5	A
ABC_6_TEST	GEN	2016-02-01T00:25:00.000+00:00	5005	k	5	A

Sample 2:

This submission is for a flow gate (intertie) resource for trade date 02/01/16, formatted in GMT with kWh values for 5 minute intervals that are for actual values.

Note: For flow gates, SCs must include both MSMT_TYPE(s) for "LOAD" and "GEN" for each INTERVAL_END_TIME. Imports should reflect "Gen" and Exports should reflect "Load".

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Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)

Effective Date:

01/29/2026

RES_ID	MSMT_TYPE	INTERVAL_END_TIME	VALUE	UOM	INTERVAL_LENGTH	MSMT_QUALITY
TESTGO	GEN	2016-02-01T00:00:00.000+00:00	1000	k	5	A
TESTGO	LOAD	2016-02-01T00:00:00.000+00:00	2000	k	5	A
TESTGO	GEN	2016-02-01T00:05:00.000+00:00	1500	k	5	A
TESTGO	LOAD	2016-02-01T00:05:00.000+00:00	1600	k	5	A
TESTGO	GEN	2016-02-01T00:10:00.000+00:00	1300	k	5	A
TESTGO	LOAD	2016-02-01T00:10:00.000+00:00	1350	k	5	A

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Operations

ISO Version:

1.13

Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)

Effective Date:

01/29/2026

Sample 3:

This submission is for a LOAD resource for trade date 02/01/16, formatted in GMT with MWh values for 60 minute intervals that are for estimated values.

RES_ID	MSMT_TYPE	INTERVAL_END_TIME	VALUE	UOM	INTERVAL_LENGTH	MSMT_QUALITY
ELAP_TEST_REST	LOAD	2016-02-01T00:00:00.000+00:00	1000	M	60	E
ELAP_TEST_REST	LOAD	2016-02-01T00:05:00.000+00:00	1020	M	60	E
ELAP_TEST_REST	LOAD	2016-02-01T00:10:00.000+00:00	1050	M	60	E
ELAP_TEST_REST	LOAD	2016-02-01T00:15:00.000+00:00	1600	M	60	E
ELAP_TEST_REST	LOAD	2016-02-01T00:20:00.000+00:00	1300	M	60	E
ELAP_TEST_REST	LOAD	2016-02-01T00:25:00.000+00:00	1350	M	60	E

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California ISO

Operations

ISO Version:

1.13

Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)

Effective Date:

01/29/2026

Attachment D: Sample XML file Formats

Please refer to the current version of the OMAR Online Replacement Technical Specification document located at:

<http://www.caiso.com/Documents/OMAROnlineReplacementTechnicalSpecificationCleanv112.pdf>

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Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)

Effective Date:

01/29/2026

Attachment E: dateTime Data Type

The dateTime is used to specify a date and a time.

The dateTime is specified in the following form YYYY-MM-DDThh: mm:ss [(+|-) hh:mm:ss] where:

YYYY	indicates the year
MM	indicates the month
DD	indicates the day
T	indicates the start of the required time section
hh	indicates the hour
mm	indicates the minute
ss	indicates the second
+ (plus) or - (minus)	to specify an offset from the UTC time

Sample dateTime format variations supported by OMAR Replacement API:

- 2016-01-26T07:00:00.000-00:00
- 2016-01-26T07:00:00Z

	Daily -0000 offset	
	start	end
Daylight-Savings Time	2014-10-15T07:00-00:00	2014-10-16T07:00-00:00
Non Daylight-Savings Time	2014-11-15T08:00-0000	2014-11-16T08:00-0000
Short Day	2014-03-09T08:00-0000	2014-03-10T07:00-0000
Long Day	2014-11-02T07:00-0000	2014-11-03T08:00-0000

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Attachment F: Baseline Methods and Measurement Type mapping

Measurement Type	Data Granularity	Baseline Method	Comments
LOAD	5 minute	<ul style="list-style-type: none"> Control Group Day Matching 5/10 (Residential Only) Day Matching 10/10 Day Matching Combined Weather Matching Meter Generation Output¹ Meter Generation Output with 10 in 10² 	<p>AS Resource only</p> <p>This is the actual load for intervals the resource receives an Ancillary Service award.</p> <p>Both LOAD and MBMA data sets are required for no pay calculations, even though the LOAD data includes the same values submitted in the MBMA data set.³</p>
GEN	5 minute	<ul style="list-style-type: none"> Control Group Day Matching 5/10 (Residential Only) Day Matching 10/10 Day Matching Combined Weather Matching Meter Generation Output Meter Generation Output with 10 in 10 	<p>Demand Response Energy Measurement (DREM) or performance data of the resource in response to an award or dispatch.</p> <p>Data required for intervals where TEE>0.</p>
MBMA	5 minute	<ul style="list-style-type: none"> Control Group Day Matching 5/10 (Residential Only) Day Matching 10/10 Day Matching Combined Weather Matching Meter Generation Output Meter Generation Output with 10 in 10 	<p>AS Resource Only</p> <p>This is the actual load data for the interval preceding, during, and following the trading intervals for which they were awarded ancillary services.⁴</p>

¹ "MGO" is a performance evaluation methodology that can be used by a generation device located behind the revenue meter, to represent the load reduction attributed only to the output of that generation device excluding its typical use. Referred to as "generation offset only".

² "MGO with 10 in 10" under this performance methodology option, the demand response performance is a result of combining the demand response energy measurement (DREM) from pure load reduction calculated utilizing a customer load baseline (10 in 10, 5 in 10, weather matching) combined with the DREM from load reduction attributed to generation offset (MGO). Referred to as "load and generation"

³ For a Proxy Demand Resource or Reliability Demand Response Resource using behind-the-meter generation to offset demand utilizing one of the MGO performance methodology options, meter data submitted for LOAD and MBMA represents metered load for the service account (customer) not of the sub-metered behind-the-meter generator.

⁴ California Independent System Operator Corporation Tariff Section 4.13.4

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California ISO

Operations

ISO Version:

1.13

Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)

Effective Date:

01/29/2026

CBL	Hourly	<ul style="list-style-type: none"> • Control Group • Day Matching 5/10 (Residential Only) • Day Matching 10/10 • Day Matching Combined • Weather Matching • Meter Generation Output with 10 in 10 	<p>For monitoring only.</p> <p>Underlying load data used in the customer load baseline calculation for all baseline methods. 90 days of historic data prior to the day of the event is required.</p> <p>This is applicable for the "MGO with 10 in 10"⁵ only. It represents the net load data used to develop the customer load baseline of the facility only. 90 days of historic data prior to the day of the event is required.</p>
TMNT	Hourly	<ul style="list-style-type: none"> • Control Group • Meter Generation Output⁶ • Meter Generation Output with 10 in 10 	<p>For monitoring Only</p> <p>For the Control Group baseline method, data represents the actual load data for those locations in the treatment group.</p> <p>For the MGO baseline method, TMNT data represents the generation device metered values.</p>
BASE	Hourly	<ul style="list-style-type: none"> • Control Group • Day Matching 5/10 (Residential Only) • Day Matching 10/10 • Day Matching Combined • Weather Matching • Meter Generation Output with 10 in 10 	<p>For monitoring Only</p> <p>Calculated customer load baseline (CLB) values used to derive DREM. For the "MGO with 10 in 10": BASE data represents the customer load baseline used to calculate the DREM attributed to the pure load reduction only.</p> <p>BASE data is submitted for trade dates when the resource/registration</p>

⁵ "MGO with 10 in 10" provides for the use of 10 in 10, 5 in 10 (residential customers only) and weather matching performance evaluation methods in the calculation of the DREM portion attributed to customer load response only.

⁶ For hours when a behind-the-meter storage device is charging and exporting, the scheduling coordinator metered entity should record a "zero" for those hours or intervals in that hour.

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California ISO

Operations

ISO Version:

1.13

Market Results Interface- Settlements (MRI-S) (Settlement Quality Meter Data Submission)

Effective Date:

01/29/2026

is being actively bid into the market for the hours in which it is bid.

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